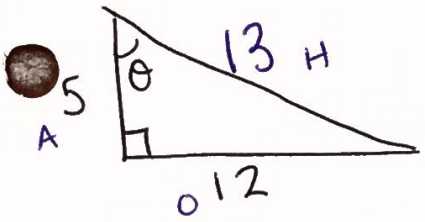
Practice Quiz - Right Triangle Trig

1)

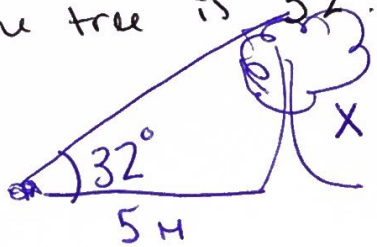


$\sin\theta = \frac{12}{13}$ $\cos\theta = \frac{5}{13}$ $\tan\theta = \frac{12}{5}$

$\csc\theta = \frac{13}{12}$ $\sec\theta = \frac{13}{5}$ $\cot\theta = \frac{5}{12}$

$5^2 + 12^2 = c^2$

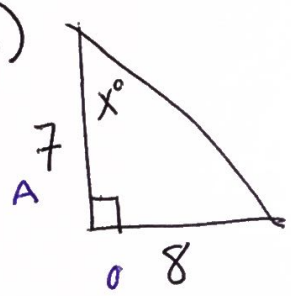
2) There is a rock on the ground 5 meters from a tree. The angle of elevation from the rock to the top of the tree is 32°. Find the height of the tree.



$\tan 32 = \frac{x}{5}$

$x = 5 \cdot \tan 32 \approx$ 3.12 M tall

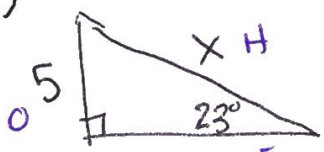
3)



$\tan x = \frac{8}{7}$

$x = \tan^{-1}\left(\frac{8}{7}\right) =$ 48.8°

4)

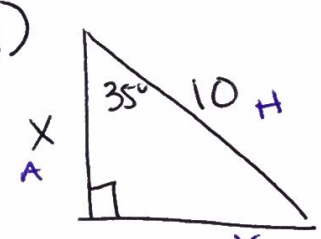


$\sin 23 = \frac{5}{x}$

$x = 5/\sin 23$

$x \approx 12.8$

5)

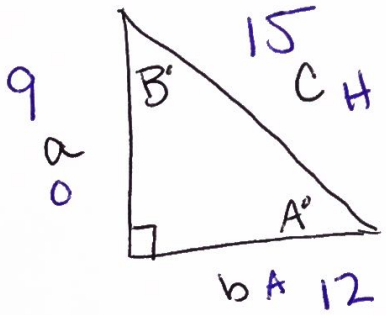


$\cos 35 = \frac{x}{10}$

$x = 10 \cdot \cos 35$

$= 8.19$

6) Solve the triangle if $\sin A = \frac{9}{15}$



$a = 9$

$b = 12$

$c = 15$

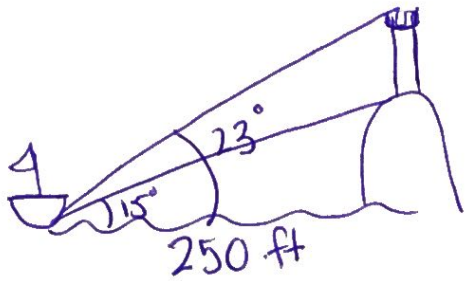
$A = \sin^{-1}\left(\frac{9}{15}\right) \approx 37°$

$B = 53°$

$9^2 + b^2 = 15^2$

or $3 \cdot 3, \overset{4}{b} \cdot 3, 5 \cdot 3$

7) A boat in the water ⇒ 250 ft away from a hill sees a castle on top of the hill. The angle of elevation to the top of the hill is 15° and the angle of elevation to the top of the castle is 23°. What is the height of the castle?

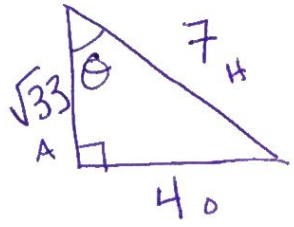


$\tan 15 = \frac{hill}{250}$ $\quad hill \approx 67$ ft

$\tan 23 = \frac{both}{250}$ $\quad both \approx 106$ ft

castle $= 106 - 67 \approx 39$ ft

8) Find $\tan\theta$ and $\cos\theta$ if $\sin\theta = \frac{4}{7}$ (4 = O, 7 = H). Leave your answers in radical form if necessary.



$4^2 + x^2 = 7^2$

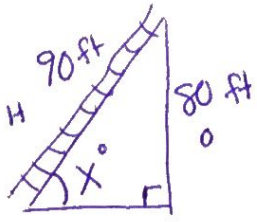
$16 + x^2 = 49$

$x^2 = 33$

$\tan\theta = \frac{4}{\sqrt{33}} = \frac{4\sqrt{33}}{33}$

$\cos\theta = \frac{\sqrt{33}}{7}$

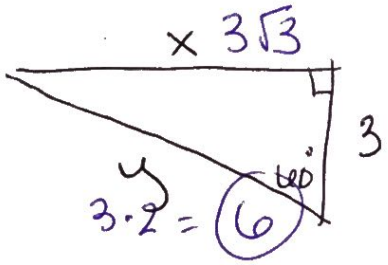
9) A police department's longest ladder is 90 ft long. Safety regulations only allow it to be used for rescues up to 80 ft from the ground. What is the maximum safe angle of elevation for the rescue ladder?



$\sin x = \frac{80}{90}$

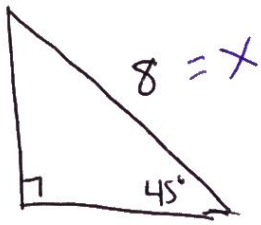
$x = \sin^{-1}\left(\frac{80}{90}\right) \approx 63°$

10)



$3 \cdot 2 = (6)$

11)



$\frac{8}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$

$x = \frac{8}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{8\sqrt{2}}{2} = (4\sqrt{2})$